

IN THE CLAIMS:

The following is a complete listing of the claims in this application, reflects all changes currently being made to the claims, and replaces all earlier versions and all earlier listings of the claims:

1. (Currently Amended) An ink jet recording head comprising:
  - a flat substrate having an end face and front and back flat main surfaces, said front and back flat main surfaces having a larger area as compared to the end face;
  - a discharge port formed above the front flat main surface of the substrate;
  - a wiring electrode connected to an energy generating member formed on the front flat main surface of the substrate, said energy generating member generating energy to be utilized to discharge ink from a said discharge port ~~formed on the front flat main surface of the substrate;~~
  - a stepped surface provided at an end of the substrate and provided lower than the front flat main surface;
  - a connection electrode electrically connected to the wiring electrode and provided on the stepped surface;
  - an electrical wiring member superimposed on the connection electrode and electrically connected to the connection electrode through a bump electrode to supply an electrical signal or an electrical power to the connection electrode; and

a sealing member for electrically conductively sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, ~~in such a manner that the connection electrodes, the bump electrode, and the electrical wiring member are vertically overlapped with each other through the bump electrode~~

wherein said sealing member does not extend beyond said discharge port in such a manner that the connection electrode, the bump electrode and the electrical wiring member are vertically overlapped, and

wherein the bump electrode is located between the connection electrode and the electrical wiring member.

2. (Previously Presented) The ink jet recording head according to claim 1, wherein the substrate is an insulation substrate made of a single crystal Si material, and wherein a pattern on a surface of the substrate is formed by anisotropic etching.

3. (Previously Presented) The ink jet recording head according to claim 2, wherein said stepped surface is located in an area of the substrate that becomes thinner in a stepwise fashion in a vicinity of the end face.

4. (Previously Presented) The ink jet recording head according to claim 3, wherein a surface of said stepped surface is parallel with the front flat main surface of the substrate.

5. and 6. (Canceled)

7. (Original) The ink jet recording head according to claim 1, wherein the energy generating member is an electrothermal converting element for generating thermal energy.

8. (Original) The ink jet recording head according to claim 1, wherein the discharge port is disposed so as to face the energy generating member.

9. (Currently Amended) An ink jet recording apparatus comprising:  
an ink jet recording head having:  
a flat substrate having an end face and front and back flat main surfaces, said front and back flat main surfaces having a larger area as compared to the end face;

a discharge port formed above the front flat main surface of the substrate;

a wiring electrode connected to an energy generating member formed on the front flat main surface of the substrate, said energy generating member generating energy to be utilized to discharge ink from a said discharge port ~~formed on the front flat main surface of the substrate;~~

a stepped surface provided at an end of the substrate and provided lower than the front flat main surface;

a connection electrode electrically connected to the wiring electrode and provided on the stepped surface;

an electrical wiring member superimposed on the connection electrode and electrically connected to the connection electrode through a bump electrode to supply an electrical signal or an electrical power to the connection electrode;

a sealing member for electrically conductively sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, ~~in such a manner that the connection electrodes, the bump electrode, and the electrical wiring member are vertically overlapped with each other through the bump electrode; and~~

wherein said sealing member does not extend beyond said discharge port in such a manner that the connection electrode, the bump electrode and the electrical wiring member are vertically overlapped, and

wherein the bump electrode is located between the connection electrode and the electrical wiring member; and

a member on which the ink jet recording head is mounted.

10. (Currently Amended) A method for sealing an electrode of an ink jet recording head, ~~said the~~ ink jet recording head comprising a flat substrate, ~~said the~~ flat substrate having an end face and front and back flat main surfaces, ~~said the~~ front and back flat main surfaces having a larger area as compared to the end face, a discharge port formed above the front flat main surface of the substrate, ~~said the~~ ink jet recording head further comprising a wiring electrode connected to an energy generating member formed on the front flat main surface of the substrate, ~~and an ink discharge port located above the front flat main surface,~~ said method comprising the steps of:

providing a stepped surface at an end of the substrate such that the stepped surface is lower than the front flat main surface;

providing, on the stepped surface, a connection electrode electrically connected to the wiring electrode;

providing an electrical wiring member superimposed on the connection electrode and electrically connected to the connection electrode through a bump electrode to supply an electrical signal or an electrical power to the connection electrode; and

electrically conductively sealing and covering, with a sealing member, the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, ~~in such a manner that the connection electrodes, the bump electrode, and the electrical wiring member are vertically overlapped with each other through the bump electrode~~

wherein the sealing member does not extend beyond the discharge port in such a manner that the connection electrode, the bump electrode, and the electrical wiring member are vertically overlapped, and

wherein the bump electrode is located between the connection electrode and the electrical wiring member.